Practice: 659 - Wetland Enhancement

Scenario: #1 - Mineral Flat-Tile Drain Removal

Scenario Description:

A Mineral Flat wetland is to be enhanced by tile drain removal. The tract size is 160 Acres consists of surface saturated soils interspersed with shallow depressions that are not depressional class HGM wetlands. The wetland size is also 160 acres. Resource Concerns are: 4-SOIL QUALITY DEGRADATION - Organic matter depletion, 11- WATER QUALITY DEGRADATION - Excess nutrients in surface and ground waters, 12 - WATER QUALITY DEGRADATION - Pesticides transported to surface and ground waters, 16 - WATER QUALITY DEGRADATION - Excessive sediment in surface waters, 18 - DEGRADED PLANT CONDITION - Undesirable plant productivity and health, 19 - DEGRADED PLANT CONDITION, Inadequate strucuture and composition, 22- INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.

Before Situation:

The site has been drained with a tile drain system. A suitable seed bank exists for natural regeneration to re-establish hydrophytic vegetation. The site is in agricultural production.

After Situation:

The drain tiles have been rendered non-functional by excavating 50 foot lengths of tile mains and laterals in 24 separate locations, and backfilling with excavated earth, which is compacted with the excavator bucket. There are no facilitating practices. Enhancement of hydrology and plant community functions will improve the WATER QUALITY and DEGRADED PLANT CONDITION concerns listed above. The hydrologic and vegetative practices will address the SOIL QUALITY DEGRADATION and INADEQUATE HABITAT FOR FISH AND WILDLIFE concerns.

Scenario Feature Measure: Acres of Tract

Scenario Unit: Acre

Scenario Typical Size: 160

Scenario Cost: $1,844.77 **Scenario Cost/Unit:** $11.53

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price ($/unit)	Quantity	Cost
Equipment/Installation						
Hydraulic Excavator, .5 CY	930	Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included.	Hour	$47.65	24	$1,143.60
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$20.15	24	$483.60
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$217.57	1	$217.57

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Scenario: #2 - Palustrine Flood-plain features and levee removal

Scenario Description:

A riverine wetland site on a floodplain is to be enhanced by features and levee removal. The site has been converted to agricultural production. In this instance, enhancement means a manipulation that increases or expands the capacity of some wetland function(s) at the expense of other wetland functions which are diminished, adversely affected, or penalized by the same manipulation. Primarily, resource concerns are related to soil and water quality degradation, degraded plant condition, and in-adequate habitat for wildlife. The enhancement shall be for the purpose of maintaining the site as wetland habitat. The site shall be cultivated only under natural condtions and not annually, and such cultivation shall not diminish the site's capacity to function as wildlife habitat. Livestock may graze the site according to a grazing management plan that allows for establishment of any planted species.

Before Situation:

A levee keeps flood-water off the site. The original cover was forest. The site may or may not be drained by surface ditches which collect surface water and direct it to a river or stream. The site has been completely cleared. For natural regeneration of forest species, a suitable, adjacent seed-wall may or may not exist . The lateral connectivity between the channel and floodplain has been altered by construction of levees along the reach.

After Situation:

The hydrology of the site is enhanced using wetland embankments, ditch plugs, excavation of macrotopographic features, earthfill placement of macrotopographic features, and levee removal. Wetland embankments are typically less than 3 feet in height and have an associated water control structure. Marcotopographic excavations and earthfill features constructed on the wetland and adjacent non-wetland area typically have a maximum depth or height of 24 inches. The levee is breached at the upstream and downstream ends of the tract reach, restoring dynamic stream flooding. The breach length is 150 feet long at both locations. Both the wetland and non-wetland areas are planted with a mix of bottomland hardwood species adapted to the site. Facilitating practices include Structure for Water Control, Grade Stabilization Structure, Conservation Cover, and Tree and Shrub Planting. Restoration of hydrology and plant community functions will improve the WATER QUALITY and DEGRADED PLANT CONDITION concerns listed above. The hydrologic and vegetative practices will address the SOIL QUALITY DEGRADATION and INADEQUATE HABITAT FOR FISH AND WILDLIFE concerns.

Scenario Feature Measure: Cubic Yards of Earthwork

Scenario Unit: Cubic Yard

Scenario Typical Size: 4,700

Scenario Cost: $17,836.80 **Scenario Cost/Unit:** $3.80

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price ($/unit)	Quantity	Cost
Equipment/Installation						
Excavation, common earth, wet, side cast, large equipment	1228	Bulk excavation and side casting of wet common earth with hydraulic excavator or dragline with greater than 1 CY capacity. Includes equipment and labor.	Cubic Yard	$3.58	3500	$12,530.00
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	$3.73	1200	$4,476.00
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$415.40	2	$830.80

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Scenario: #6 - Depression or Playa wetland restoration, CY units

Scenario Description:

A depressional or playa wetland is to be enhanced by sediment removal and ditch plugging. In this instance, enhancement means a manipulation that increases or expands the capacity of some wetland function(s) at the expense of other wetland functions which are diminished, adversely affected, or penalized by the same manipulation. The site is an enclosed depression or playa whose hydrology is supplied from either surface runoff or sub-surface flow. Primarily, resource concerns are related to soil and water quality degradation, degraded plant condition, and in-adequate habitat for wildlife. The enhancement shall be for the purpose of maintaining the depression or playa as wetland habitat. The depression or playa shall be cultivated only under natural condtions and not annually. Livestock may graze the site according to a grazing management plan.

Before Situation:

A typical deprssional/playa wetland of 10 acres has been converted to agricultural production, and may or may not be drained by a surface ditch. The ditch is 4' average depth, and 12 feet average width. The wetland receives surface runoff from the adjacent upland watershed, and ponds water on a shallow perched layer. The watershed has been converted from native to an agricultural land-use, and the resultant soil erosion has deposited 6" of sediment in the bottom of the depression.

After Situation:

The ditch has been plugged by the installation of a 50' long section of compacted clay fill, and the deposition has been removed down to the original topsoil layer. A herbaceous plant community has been seeded. Facilitative practices include Conservation Cover. Restoration of hydrology and plant community functions will improve the WATER QUALITY and DEGRADED PLANT CONDITION concerns listed above. The hydrologic and vegetative practices will address the SOIL QUALITY DEGRADATION and INADEQUATE HABITAT FOR FISH AND WILDLIFE concerns.

Scenario Feature Measure: Cubic Yards of Earthwork

Scenario Unit: Cubic Yard

Scenario Typical Size: 8,298

Scenario Cost: $30,987.69 **Scenario Cost/Unit:** $3.73

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price ($/unit)	Quantity	Cost
Equipment/Installation						
Excavation, common earth, wet, side cast, large equipment	1228	Bulk excavation and side casting of wet common earth with hydraulic excavator or dragline with greater than 1 CY capacity. Includes equipment and labor.	Cubic Yard	$3.58	8067	$28,879.86
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	$3.73	231	$861.63
Mobilization						
Mobilization, large equipment	1140	Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits.	Each	$415.40	3	$1,246.20